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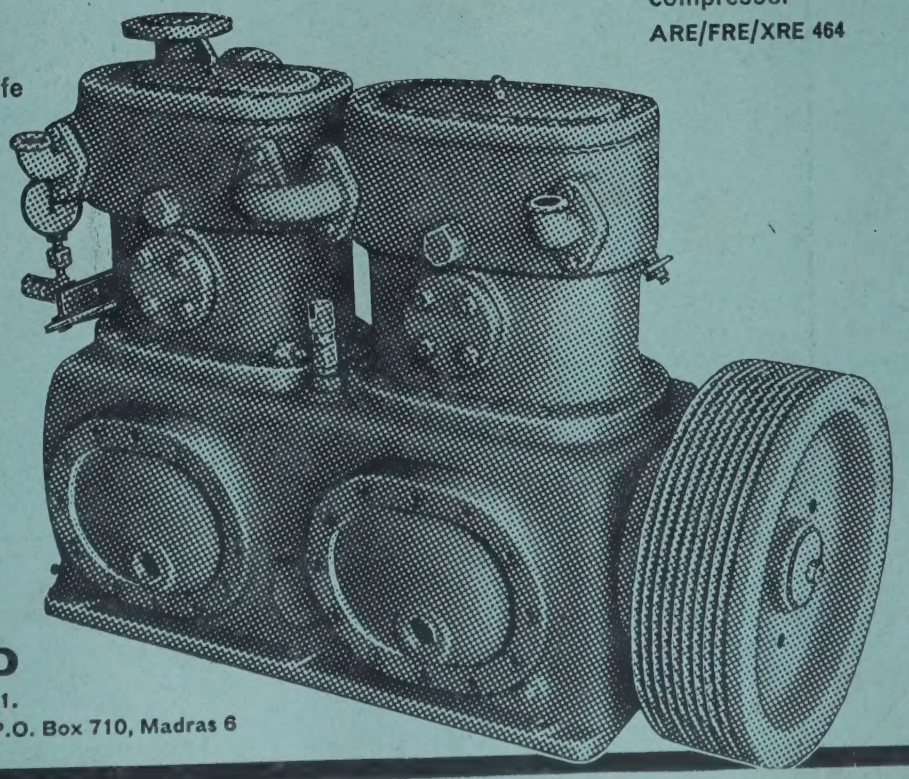

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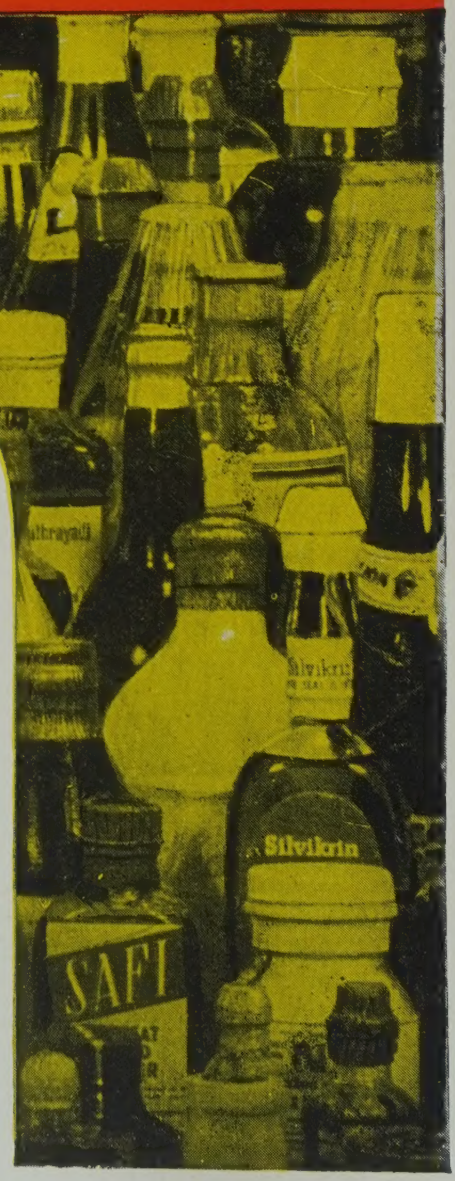

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Next Month....

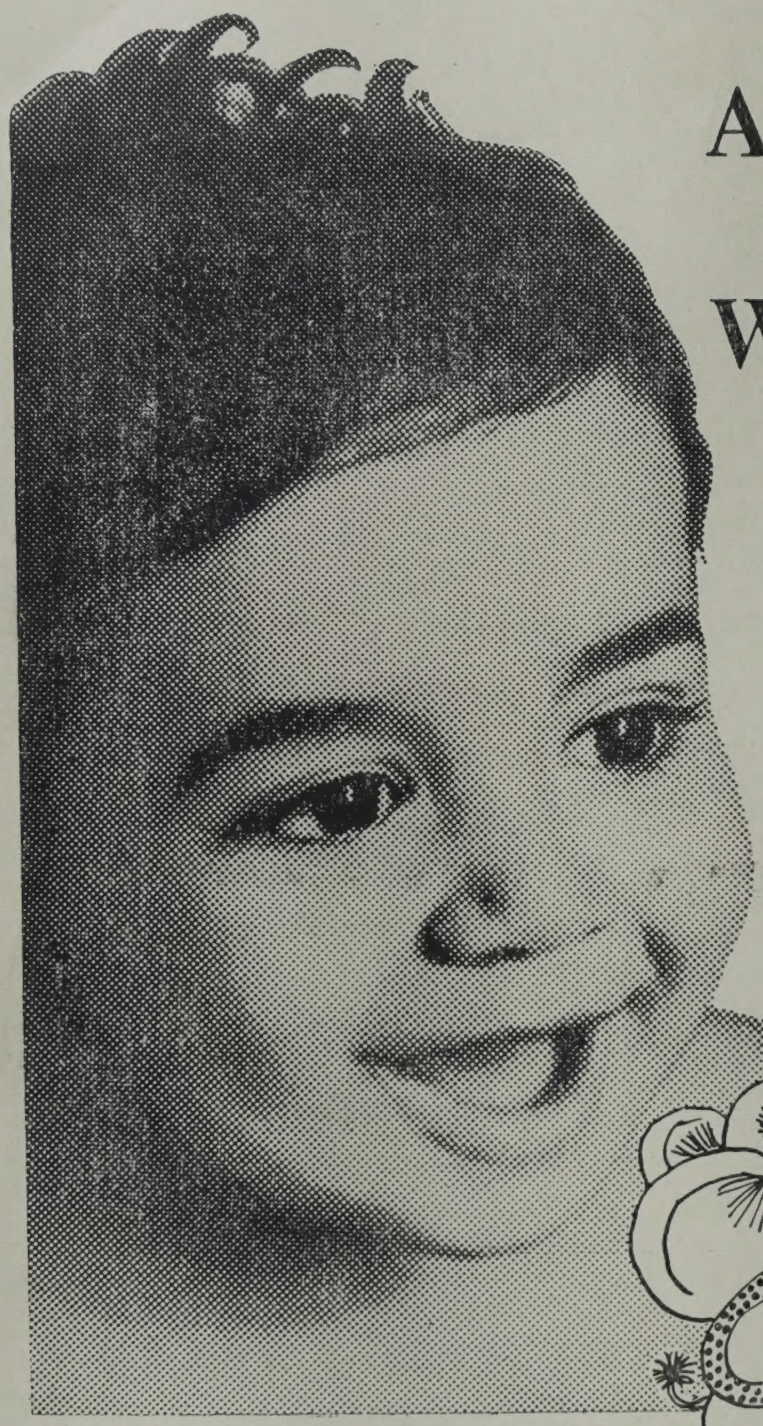
The spotlight will be turned on the packaging industry in the October issue of the F. I. J. with a number of articles on various aspects of this vital sector of the food industry.

The issue will also contain a useful contribution on the role of feeding antibiotics in the animal industry by Dr. K. Suryanarayana Rao of the Nutrition Research Laboratories, Hyderabad.

In an interesting article, Mr. P. K. Vijayan, a Ph.D. scholar in the Genetic Faculty of the Agricultural College and Research Institute, Coimbatore, will discuss a novel method for the commercial production of coconut-milk.

Of interest to the fisheries industry will be a contribution on fish curing by Dr. S. V. Suryanarayana Rao of the Central Food Technological Research Institute, Mysore.

The second and last part of the article on "Malnutrition and National Development" by Dr. Alan Berg, Chief, Food Resources and Regional Development, U.S. AID, New Delhi, will be among the other contributions.



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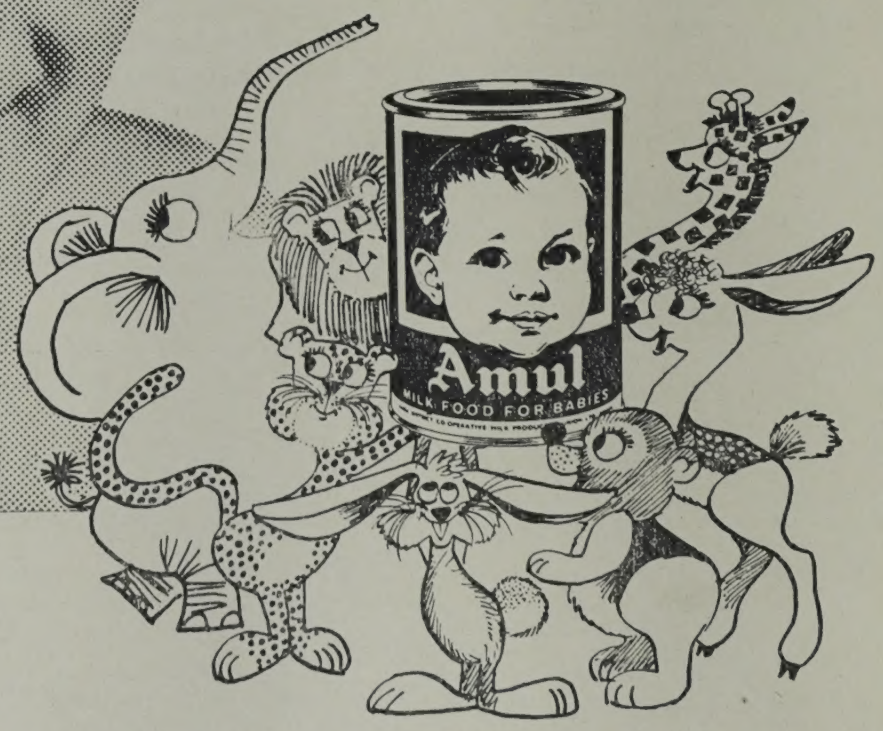

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Editorial

Sugar Policy

BY freeing a part of what the sugar mills produce for sale in the open market the Government's new sugar policy goes some way towards averting a major crisis in the sugar industry. Under the new scheme the sugar mills are aksed to give to the Government in 1967-68 some 60 per cent. of the sugar they produced in 1966-67; they are allowed to sell the balance in the open market. It is expected that the sugar mills will be able to pay a higher price for cane such as will check the diversion of the raw material to gur and khandsari units. At the same time, the mills will get relief in excise duty to the extent of 50 per cent. in respect of output above 80 per cent. of what they produced in the 1966-67 season. And as for the farmer, he gets a higher price of Rs. 2.75 per maund for a recovery of 9.4 per cent. or less and an additional two paise for every increase of 0.1 per cent. in recovery above the minimum.

The policy is no doubt well conceived. It assures some freedom and relief in excise duty for sugar mills and a better price for the farmer. In the absence of special measures of this kind it is extremely unlikely that the industry will produce anything more than 15 to 17 lakh tons next year against 22 lakh tonnes in 1966-67 and 35 lakh tonnes in 1965-66. To the extent that the Government has now realised that the industry is in dire need of incentives for increased production and also that something must be done to check the diversion of cane to unorganised producers the policy needs to be welcomed.

However, there are quite a few snags. The current year's cane crop is known to be smaller than last year's. There has been a steep fall in the area and output of sugarcane and it is not likely that in the new season the industry can count upon ample cane supplies. But this is not the only difficulty. It is to be feared that the scheme will not allow sugar mills to compete effectively even for the available cane supplies. The scheme implies that sugar mills must first meet the Government's claim of 60 per cent. of their production.. This means they will not be able to produce any sugar for the free market till about January next. Meanwhile, gur producers would have had better access to available cane. It would appear that gur and khandsari units have already started offering high price for cane and it is in fact expected that they will indulge in some aggressive buying.

The least that New Delhi should do to make its sugar policy more meaningful is to enable the factories to produce sugar for the free market from the beginning of the next season, commencing October, 1967.

Meanwhile, it is essential that the food processing industries should have free access to sugar at reasonable prices. In the absence of such assured supplies. the industries will find it hard to maintain the exports they have built up at considerable effort. Moreover, these industries play a vital role as an essential adjunct to agriculture. It would be a great pity if they did not get ample sugar at prices they can afford.

PROBLEMS OF QUALITY CONTROL IN BISCUIT INDUSTRY

By C. K. KAMATH, B.Sc., M. Pharm. (Foods & Drugs)

QUALITY control in any industry is not a matter of accident. It is the result of intelligent and deliberate efforts to produce an end product to predetermined and established quality standards. Although baking is even today considered an art, with the availability of modern techniques such as standardisation of ingredients, process control and stock rotation techniques, some amount of scientific approach is made.

The real test of the quality of a biscuit is a simple one – taste. The taste of the pudding is in the eating, and all the quality control measures adopted aim at producing a tasty, crisp end product. Some of the major fields of quality control in the biscuit industry lie in areas such as raw materials and packaging materials, intermediate processing such as mixing and fermentation, correct baking in the ovens, packing the finished product as quickly and hot as possible and also rotation of the finished stocks both in the manufacturer's godown as well as on the shelves of the dealers and retail sellers.

RAW MATERIALS: Some of the largely used ingredients are wheat flour, hydrogenated fats (vanaspati), sugar, skimmed milk powder, yeast, desiccated coconut powder, ammonium bicarb, common salt, flavouring and colouring agents, etc.

(a) WHEAT FLOUR : The supplies vary in quality considerably. Being a government-controlled item, there is very little a manufacturer can do to control the quality. Often for certain varieties of biscuits a particular grade of wheat flour is needed and when it cannot be obtained, heavy defectives take place. The gluton content, resistance extensibility and water absorption could be pre-determined to assist proper handling of the dough both yeasted and unyeasted. But then, deliveries from the mills are so irregular that one finds hardly any time to quarantine the stocks received, get them analysed and then allocate them properly. Unless adequate "buffer" stocks are available, bakeries are compelled to use whatever supplies are received on a "first come first use" basis. It has been often found that the so-called hard flour or soft flour is really not hard or soft in its properties. Hence, many problems are faced while producing biscuits and the quality of finished biscuits is subject to variation all through the period of manufacture. Often the production units have to mix the lots in different grades to get the dough of the desired properties.

Like the users, if the manufacturers of wheat flour (mills) could pre-determine the properties of the representative samples and inform the users of the same, it would help a great deal to exercise better control on the processing in the bakeries. However, due to extreme shortage of wheat in the country, the millers have no time or patience to analyse the samples. They mill all kinds of wheat and often mix them and supply such flour to users. Quality control assumes secondary importance in an ever-scarce material.

(b) VEGETABLE FATS (VANASPATI): These, so-called shortenings which help in the improvement of extensibility of the dough and help in the general "baking" often come in very hard consistency. Such hard lumps do not mix well in the dough and give rise to variations in biscuit formation. Wherever small lumps are present, the mass of the biscuit spreads.

Manufacturers of these vegetable fats should therefore maintain a uniformly soft consistency of their products at different periods of the year. The chilling of finished fat has to be controlled and similarly the storage and rotation of the drums have to be controlled by the users. The ideal storage condition for most of these fats is 70° to 80° F or 21° to 26.6° C.

Some steps to be adopted by the users, to maintain the good quality of these fats, are that they should not be stored near odorous materials as they are susceptible to foreign odour and once the flavours are absorbed they are imparted to the baked product. Shortening containers should be kept well closed. Exposure to the natural enemies of fats like light, oxygen (air), heat or high temperatures, can easily cause the fats to become "rancid".

(c) CANE SUGAR : While most of the biscuits contain powdered sugar, occasionally if the powder is not fine enough, one comes across particles seen on biscuit surfaces. By using a standard sugar syrup the taste and colour of biscuits improve considerably. The sugar gets 'caramelised' and a uniform 'sheen' appears on baking. By preparing a uniformly viscous standard syrup and reducing the corresponding water addition, better results could be achieved. The syrup could be nicely filtered and used, eliminating the chances of jute threads and other foreign particles getting into the dough.

(d) SKIMMED MILK POWDER : Often lumpy, discoloured material is found in the bags, with presence of weevils, also. Although spray-dried material is preferable, yet roller-dried powder with about 80-85% solubility could be used. In case the powder tends to form lumps with cold water, warm water could be usefully employed.

Storage of skimmed milk powder bags in a warm dry area away from entrance doors, and providing these bags with polythene linings, tend to preserve the product better.

(e) YEAST : Whereas "dried" yeast is always preferable due to its longer shelf-life and also its more uniform "dough-raising capacity", yet, due to cost and availability factors, often 'compressed' or 'fresh' yeast is to be used. This fresh yeast is active for about a fortnight, and that too, if preserved under cold conditions, such as by covering the blocks with ice. Moreover, the quantity of this type of yeast required will be double the quantity of dried yeast. The material tends to "putrefy" on storage and emits foul odours. Mould growth also appears. In the fermented kind of biscuits (salted varieties and cream crackers) the yeast plays a vital role and hence the quality of such yeast should be uniformly good.

Often in bakeries, old left-over fermented doughs are re-used. If the proportion of this "old" dough exceeds a limit of about 10% of the final bulk or if the 'age' of such old dough exceeds, say, a fortnight, then, due to its increased acidity and sour taste, the biscuits produced will develop a sour taste and a "musty" odour. It may be worth while to discard such old left-over doughs rather than adding them in large quantities and spoiling the quality of the final baked biscuits.

PACKAGING MATERIALS AND THEIR ROLE IN QUALITY CONTROL : The most important is 'crispness'. Every attempt is made to keep the biscuits as crisp as possible until they reach the consumers. Packaging materials used for biscuit packs are mostly waxed papers, greaseproof papers, vegetable parchment papers, cellophane (heat-sealable variety) and airtight containers in tin, etc.

All these items should ensure that (1) the air and atmospheric moistures do not permeate fast enough to spoil the biscuits. (2) Since most of the biscuits contain fats, such fats should not "seep" through the packing materials. If oil-seepage takes place, then rancidity may develop spoiling the quality of the biscuits. (3) The packing materials employed should not impart odours to the contents. The various packaging materials are checked for the following main features :

(1) **Metal containers :** For air leak-proofness, rigidity, shape, size and print in case of printed containers. Lids fit well.

(2) **Grease-proof papers :** For grammage and oil-seepage.

(3) **Cardboard boxes :** For grammage, box-formation and strength and proper fitting.

(4) **Waxed papers :** For percentage of coated waxes and grammage of base paper.

(5) **Cellophane :** For heat-sealing property and grammage.

(6) **Metal Foils :** For heat-sealing property and grammage of the final laminate.

(7) **Printed foil and outer paper wrappers :** For grammage and decorative printing conforming to standard designs and colour schemes.

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The samples of all these materials supplied to the stores should be checked regularly. Also, materials like waxed papers and cellophane rolls must be stored in special rooms where the temperature and humidity are controlled at desired levels.

SHELF-LIFE OF BISCUITS

Every attempt is being made to give the maximum shelf-life to biscuits. Normally, being consumer products, biscuits are used up quickly. However, depending upon the type of pack and demand for a particular variety, the manufacturer may have to ensure shelf-lives of different lengths. For example, for the following packs, the shelf-lives indicated are desirable :

(i) Air-tight cartons: (A.T.Cs) minimum 4 months (local); minimum 6 months (export).

(ii) Exclusive wrapper packs, (EWP's with cellophane wrapping): minimum 4 months (local); minimum 6 months (export).

(iii) Sealed drums, barrels: minimum 6 months (local); minimum 9 months (export).

(iv) Bulk tins with loose biscuits: minimum 4 months (local); minimum 6 months (export).

(v) Fat-dipped salted biscuits and cracker-varieties: minimum 4 months (local); minimum 6 months (export).

Moisture and air are the biggest enemies of biscuits. The entire packaging is attempted with a view to preventing the entry of these two factors. The I.S.I. has laid down a maximum of 6% moisture for biscuits to be termed as of non-standard quality. It is observed that in some varieties of biscuits even at a 4.5% level, they tend to be "soft".

The success of quality control efforts in the biscuit industry depends on :

(a) Packing the biscuits produced in as hot a condition as possible by "oven-fresh" packing.

(b) Packed stocks not being left overnight for final packing. Biscuits stored in trays should be quickly used up and the dehumidified room should be well maintained. Bulk tins with loose biscuits must be closed with the lids every day, every shift.

(c) Packed stocks being moved and stored and rotated from the factory on the "first in first out" basis. Similarly stocks in the market with dealers and stockists should be rotated quickly and properly.

Quality control in any industry in general and the biscuit industry in particular cannot be fully and satisfactorily implemented by only one department of quality control. The end-product being a food-product, it must be produced with the utmost care and precaution. One simple technique which can ensure the elimination of foreign particles could be that all solids and powders should be sieved and all liquids should be filtered. Producing a good crisp biscuit is not difficult at the factory level. The difficulty is in seeing that the product reaches the consumer in the best condition possible so that he gets the maximum satisfaction for the money he has paid.

After all, the proof of the biscuit is in the eating!

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MALNUTRITION AND NATIONAL DEVELOPMENT—I

By ALAN BERG

Chief, Food Resources & Regional Development, U.S. Agency for International Development, New Delhi.

AS if the process of nation building were not already sufficiently complicated....

With the multitude of sometimes competitive development "solutions" being bandied about by specialists in at least a dozen fields, one often senses a dilemma of the highest order. None the less, a new entrant has burst nervously upon the scene, claiming it may have identified a basic obstacle to the development process. This particular "we shall overcome" flag is directed against malnutrition—and is based on the simple premise that alert and able-bodied people are the most essential ingredient to a strong nation. The dams, the fertiliser facilities, the steel plants, **et al**, will be of limited value, so the theory goes, if sizable portions of the population are limited in their mental and physical capacities. Recent and increasingly substantial evidence suggesting that malnutrition can lead to mental as well as physical retardation is cause for major policy concern in a number of world capitals.

The nervousness of the nutrition advocates might be a reflection of the sense of urgency of a growing international cult, which believes it has pinpointed a long-neglected problem. Or it might be construed as the normal anxiety of those seeing a solution within sight – but not within grasp. Technologically, malnutrition **can** be overcome. In fact, the fight to do it has hardly begun. More significantly, one must question whether it ever will be won, given the current path now being pursued to achieve this goal.

Although, there apparently are the beginnings of recognition of the malnutrition problem – more importantly, the implications of the problem – there is a considerable distance to travel between recognition and policy – and a still greater distance between policy and effective action.

"MINI-REMEDIES"

As to policy, it should be admitted at the outset that those who hold the decision-making powers in development circles – usually the economists – are sometimes more than a bit sceptical about this whole business. As well they might be. Over the years many of them have been "panaceaed to death" with the latest, most fashionable, all-inclusive mini-remedies – guaranteed to cure all that ails the developing world. Unfortunately, most of these "instant development" solutions have made barely a dent, much less an impact. Compounded with this inauspicious climate is a recognition that much of the vocal impetus behind the nutrition escapade comes from the so-called "do gooder" constituency, a group that historically has aroused the suspicions of the planning castes of many countries.

What do we know about this problem of malnutrition? What is the nature and the severity of the beast? What is its importance to development? What is the present ability of technology to overcome it? What are the apparent barricades? And what might be considered necessary to make the kind of massive frontal attack required if the job is indeed going to be done?

HIGH MORTALITY RATES

The problem, baldly stated, is a simple one. Half the deaths in the developing countries occur in "preschool children". (A misleading nomenclature of the trade, since in these countries most children under six have no school to be "pre" to). And in some areas, as many as 50% of the children die before they reach school age. These mortality rates are 20 to 60 times higher than in Europe and North America. In certain African countries, Libya as an example, a mother must have five children to assure that one reaches the age of fifteen. In parts of South-East Asia, 40% of the children die of disease by the age of four. This proportion of deaths is not reached in Scandinavia or North America until the age of sixty.

MALNUTRITION, THE CAUSE

The vast majority of these child deaths are attributed to infectious diseases. After digging beneath these mortality statistics, however, researchers have concluded that most of these are relatively minor childhood aliments. The cause of the death, we now know as the result of a number of studies in recent years, is not the infection itself, but usually the malnourished condition of the child when he contracted the infection. In other words, malnutrition debilitates the body to such a degree that it is incapable of resisting what would otherwise be a passing infection. In a country like Ecuador, child death due to measles is more than 300 times greater (per thousand of population) than in North America. Whooping cough is

*Portions of this article were initially presented at
— Inauguration of the Amino Acid Laboratory, Indian Agricultural Research Institute, Pusa.
— Rural Health Training Centre, Nazafgarh.
— Economics Society, St. Stephens College, University of Delhi.
— State Nutrition Officers Workshop, New Delhi.

still a major killer in much of the world. Similarly such childhood diseases as chicken pox often become fatal because of the child's malnourished condition.

Half these children don't live long enough to enjoy their sixth birthday. (It might be pointed out that pre-school age children constitute 25% of the two billion population of the developing nations -- compared to less than 10% in many of the more technologically advanced countries.) Of those who are fortunate enough to survive, more than two-thirds suffer from some degree of malnutrition. This takes many forms. For most of these children, malnutrition permanently retards their physical growth. In many countries the average 12-year-old had the physical stature of an eight-year-old in northern Europe and North America. The effect of this on productivity and the limits it places on the individual's potential contribution to his society are obvious. As a still more ominous note, there is an increasing body of evidence suggesting a similar relationship between malnutrition in the early years and mental retardation. The child's brain reaches 80% of its ultimate weight in the first 36 months — compared with 20% of body weight during this period. Studies have shown that during the months of breast feeding, children from the poorest areas grow in a comparable rate to the best nourished children elsewhere. Usually after six months of age, however - when breast milk is no longer a sufficient source of protein — growth is progressively retarded.

CHANCES OF DAMAGE

The implications of this cannot be overstated. For years man had assumed that given educational opportunities and environmental advantages, a normally born child had every prospect of being as bright and as imaginative and as productive as anyone anywhere. It is now being suggested — if one can brush aside the stigma of what historically has been interpreted as racial overtones — that these children may be basically dull; that they may emerge from childhood lacking the ability to reach their full genetic intellectual potential, regardless of subsequent training opportunities.

And we are talking about up to two-thirds of the children in many countries. The consequences for national development are clear. Further, this frightening suggestion is the best refutation of the frequently posed argument that any improvement in nutrition only aggravates that already overly-aggravated food/population balance.

A word of clarification here might be helpful: Unlike the heavily documented relationship between human malnutrition and permanent stunting of physical growth, it is suggested by some that the human evidence on the relationship of malnutrition and permanent mental retardation is not sufficient to base sweeping policy changes. It should be stressed that there is no question whatsoever that a relationship does exist. The concern is whether the effect on learning ability, memory and behaviour is **permanent,** as has been repeatedly shown with experimental animals. No experimental techniques can short-cut the time period required to find out in man. Since findings in this field are so recent, there appears little choice but to wait 20 years, stuff a malnourished person with protein, and see then if these faculties can be retrieved. Dr. Joaquin Cravioto of Mexico, a foremost pioneer in the field, argues that "sufficient evidence is already available to show that chances of permanent damage are high."

PERMANENT RETARDATION

Regardless, however, of what the papers presented at the 1987 Nutrition Conferences will ultimately conclude, it is argued here that **the question of permanent retardation is moot.** Even if a person does eventually respond to treatment, **there would have been an important and irrectrievable loss of learning time during the most critical period of learning.** More importantly, given current economic projections, **it is unlikely that today's malnourished child will have ready access to sufficient protein supply at a future date.** Unless one can foresee adequate purchasing power and enough usable protein resources to go around, any talk of the reparability or the irreparability of the damage is irrelevant.

What does all this mean to national development? How much more productive is a properly nourished man? How much more will a man with full mental and physical capacities contribute to his society? Conversely what are the costs to society of malnutrition in the form of treatment, charity and waste through death of those who have a limited number of productive years? What would be the cost/benefit ration of a ten-million-dollar investment in amino acid fortification, for example, vis-a-vis other forms of development expenditure; i.e., spending the ten million for fertiliser or dams or roads or schools? In other words, what in fact is the relationship of malnutrition to development — or more specifically, the economics of malnutrition?

FINDINGS OF STUDIES

Unfortunately, little research has been directed to these questions to date. Nevertheless, the scattering of peripheral studies which have been conducted fairly consistently suggest certain non-econometric inferences :

— Since limited life expectancy brought about by malnutrition limits the number of productive years, the cost to society (education, etc.). In supporting the person through the pre-productive years becomes proportionately more expensive per year of productive output.

— Malnutrition decreases work output. The body weak from proper nutrients protects itself by avoiding energy expenditure. This results in apathy, lethargy, and lack of initiative — characteristics commonly found in poorly fed groups in

protein deficient countries. In the past, this apparent sluggishness was frequently attributed to laziness or other so-called ethnic traits. FAO now reports that those countries with the lowest per capita daily protein (and caloric) consumption are also those with the lowest productivity.

- Malnutrition lowers a worker's resistance to disease and, relatedly, increases his rate of absenteeism from the job.
- Accident rates are high among those who tire quickly due to malnutrition. (A Canadian study observed, for example, that reduction in first aid treatments dropped 30% shortly after opening a factory lunch room.)
- The medical costs necessary to treat the effects of malnutrition — either through hospitals or health centres — are many times greater than the cost of providing the necessary nutrients to prevent the malnutrition initially. (One estimate in Central America is that the cost per 90-day case of hospitalisation is Rs. 4,500 ($ 600), compared to an annual cost of Rs. 52 to Rs. 75 ($ 7 — $ 10) to prevent the malnutrition in the first place.)
- Certain nutritional deficiencies, e.g. acute Vitamin A deficiency resulting in blindness, limit opportunities for productivity. The Indian nutritionist, Dr. C. Gopalan, reports that in his country alone there are four million cases of blindness of which at least one million (mostly attributable to Vitamin A deficiency) are preventable. The opportunities for the blind to contribute to society are considerably limited. Unfortunately, in one form or another, they usually become a drain on that society. And yet, for a few rupees a year, this blindness could easily be prevented.

The Philippine Government is attempting to pin a cost to its major diseases. To arrive at a figure, it combines production loss, manpower fatality loss, cost of medical care and the burial expense. Using this technique the total economic loss estimated per year for beri beri, for example, comes to more than 44 million pesos (more than Rs. 8 crores). This is only for those cases reported or recognised. Probably there are many others.

VITALITY SAPPED

The late Dr. R. R. Williams, synthesiser of thiamine, reported "deficiency diseases are extremely insidious in that they are sapping the vitality of Asians to an unknown degree. My conviction is that there are scores of millions, perhaps hundreds of millions in Asia who are suffering from mild beri beri, and have done so for years and they still do not know they have it. . . . . As a drain on the vitality of many people who suppose they are well, the deficiency diseases are a tremendous handicap to the struggling millions of Asia."

A cursory look at some of the other literature suggests :

- In Madagascar, a sugar refinery is reported to have reduced the turnover rate of migrant labour from 60% to 6% by the introduction of a balanced cooked meal.
- In Indo-China during World War II, a study on a rubber plantation showed that there was a 50% increase in work output after the opening of canteen facilities which provided a liberal diet.
- A study of the old East African Carrier Corps showed that those labourers who supplemented their rations with herbs and green leaves, showed a lower hospitalisation rate — 10% compared to 40% — than those who did not.

Other studies in Uganda, Kenya, Zanzibar and the old Belgian Congo come to comparable conclusions.

(To be continued)

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An FIJ Service

We have received an inquiry from a Madras firm about the availability of high-speed dough-mixing machines.

Manufacturers of machines for the food industries are invited to let us know if they can supply such a machine. They are requested to write to the Editor with full details of the machine, accompanied by an illustration, for possible publication in the Food Industries Journal.

A Correction : In the Question Box in the August issue of the Journal, there was an inquiry about bottle-filling machines and not bottle-filtering machines as the printer's devil had made it.

RECOMMENDATIONS OF BANGALORE WORKSHOP ON NEW FOODS

A historic event in the annals of the Indian food industry was the recent Bangalore Workshop on New Foods for National Development, a brief report of which was published in the August issue.

The workshop broke up into five discussion groups, each of which addressed itself to a specific problem. Reproduced in full here are the recommendations of each group.

DISCUSSION GROUP A

TOPIC : How can information be obtained economically on the markets for new, improved foods.

RECOMMENDATIONS

The problem entrusted to this group was defined in investigating the possibility to obtain reliable market information in connection with the development of new foods at the lowest possible cost.

Two alternative were clear: (a) for each industry to do it separately at its own cost——and (b) to pool their resources for a collaborative study.

Since basic data on food habits, usual cycles, taste and preference, as well as the expenditure pattern——embracing the country as a whole——are lacking, it would seem to be a monumental task for an individual organisation to obtain such information as is required to design and launch mass-produced protein foods.

The group, therefore recommends :

1. It is desirable for the food industry, its related industries, as well as other interested agencies and organisations, to collaborate in collecting the basic information indicated above by using the services of an independent research organisation.
2. It is understood that such investigation should embrace the special problems of both rural and urban populations.
3. It should also provide information on use and availability of staple food for the purpose of enriching the same with protein and amino acids.
4. Last but not least, a study should be completed on availability of raw materials for the manufacture of protein food.

In order to achieve these objectives, the group recommends the formation of an association of food industries, its related industries, as well as interested agencies and organisations, to promote activities for collection of the market information to be used in the development of new foods. The committee is confident that the talent, know-how and facilities are available within the country to undertake such activities satisfactorily. As far as the finances are concerned, the implication of this exercise having a wide significance, the industries should be forthcoming to meet the expenditure.

DISCUSSION GROUP B

TOPIC: The Government's role in speeding up the development of improved foods.

RECOMMENDATIONS

The following are the recommendations of the group:

1. As quickly as possible, the Government should publish specifications and standards of identity for edible groundnut flour, cottonseed flour and sesame flour prepared by solvent extraction or other programmes.

Dr. Nevin Scrimshaw, U.S. Protein foods specialist, addressing the workshop on "New Foods for National Development" held in Bangalore. Seated is Dr. H. A. B. Parpia, Director of the Central Food Technological Research Institute (CFTRI), Mysore.

2. The Government should review its existing food regulations and revise those which represent an unnecessary obstacle to the essential development of an adequate protein food industry.
3. The food industry should immediately bring to the notice of the Government those regulations which, in its opinion, require such revision.
4. At present the industry is not adequately represented in the central committee for food standards. The industry should be granted larger and more comprehensive representation.

Dr. (Miss) Joellene Vannoy (right), nutritionist, Wheat Associates (USA), New Delhi, who organised a protein lunch at the "New Foods for National Development" workshop in Bangalore, gives instructions to the chef and cook.

5. In this connection it was felt that the Indian food industry requires a national organisation which can speak competently and with assurance on behalf of the whole industry.
6. It is recommended that the present licensing system be liberalised to enable the food industry to develop to meet the country's urgent need for protein foods.
7. Highest priority should be accorded to the food industry to enable it to secure the materials essential for the manufacture of protein foods and such current restrictions on the movement of essential materials as inhibit the industry's growth should be relaxed.
8. Tax exemptions and other fiscal incentives should be granted to encourage the upgrading of inedible oil cake and other low-grade sources of protein to permit their utilisation in foods for human consumption.
9. Fiscal incentives should also be designed to encourage the establishment of facilities to process and market waste and trash fish in acceptable edible form.
10. Subsidies should be designed to permit the sale of low-cost protein foods to the vulnerable section of the population through outlets such as fair price shops, co-operative societies and welfare agencies.
11. In order to achieve an accelerated breakthrough in the development of new protein foods there should be no ban or restrictions in obtaining desirable foreign expertise and equipment.
12. Every assistance should be given to central organisations such as the Food Corporation of India to increase the manufacture and availability of edible groundnut and cottonseed flours.
13. The Indian food industries must be permitted and encouraged to play a more effective role in the planning and implementation of the protein foods development programmes of the national research institutes. While it is recognised that Indian industry is represented on the executive committees of these institutes, it appears that industrial representatives are not able to bring to bear the impact necessary to ensure that the products of research are utilised effectively for the nutritional and economic benefit of the country as a whole.

It cannot be emphasised too heavily that food product development should start with the consumer and that Indian industry must be enabled to contribute adequate direction, leadership and financial assistance to all phases of the national protein foods development and marketing programme.

DISCUSSION GROUP C

TOPIC : How can the food industry and institutions of food science and technology collaborate to promote the development of new improved foods.

RECOMMENDATIONS

The group feels that there is a general awareness among the industries and research institutions that an urgent need exists for closer and more active collaboration and interaction between them. In order to achieve this objective, there should be a close working liaison between the food industry and the research institutions on their problems as well as for undertaking developmental activites.

It was recognised that in India a measure of research effort is concentrated within the national laboratories. The situation is unlike that of advanced countries where the initiative for applied research comes from the industry. Thus under the Indian conditions, there is a need for a new approach to overcome the communication gap between the national laboratories and the food industries and to bring about better interaction between them.

The group suggests the following course of action in order to achieve these objectives:

1. The national laboratories should have a multidisciplinary industrial research, consultancy and extension service. This unit should work in direct association with the industry. Wherever necessary they should work in the industry itself. They should also be in a position to write feasibility reports in association with the industry.
2. Research institutions should also have a marketing intelligence service so that each problem can be examined from the marketing viewpoint, at each point of development.
3. The collaboration between the industry and the research institution should be brought about at the beginning of a research project. This collaboration should be made effective at all the stages of research and development.
4. Industry and research institutions should designate sufficiently responsible persons to maintain direct liaison between them.
5. Industry should be represented and should designate sufficiently on the policy-making bodies of the research institutions.
6. Industry should be allowed to exercise the choice of selecting a consultant from the national research institutes.
7. Industries should sponsor research projects on the problems of their interest. Wherever the entire expenditure is covered by the industry their interests should be fully safeguarded.
8. There should be regular meetings between the policy makers of the national research institutions and management of the industry, to bring about mutual exchange of views for taking policy decisions.
9. The national research institutes should provide on a regular basis documented information to the industry on advances in the field of food science and technology.
10. In order to keep up with sophisticated research and rapid advances taking place in the equipment and research techniques in advanced countries, adequate foreign exchange should be provided to import the laboratory equipment.
11. Adequate foreign exchange should be made available for scientists and technologists of the industry and national research institutes to visit countries abroad for keeping abreast of the rapid developments that are taking place.
12. High priority should be given to process development through pilot plant work in the national research institutes as well as in the industry. For this purpose the required foreign exchange should be made available, in order to maximise the fruits of the research.

DISCUSSION GROUP D

TOPIC : How can concerned organisations collaborate in order to create a favourable climate for new, improved foods.

RECOMMENDATIONS

The food manufacturer is becoming increasingly conscious and aware of the problems in the country and the possibilities of developing marketing of protein foods. Their success will depend to a great extent on creating a favourable climate for these foods.

The initiative in this regard should come from food manufacturers. The group felt that this should happen in the following ways:

(1) Government: In terms of flexibility in Government policies in relation to manufacture of food, particularly proteins.

(b) Collaboration between national laboratories and individual manufacturers, especially in the area of product development and testing.

(c) Creating a consumer awareness of the protein needs through a national umbrella campaign run by the Government in consultation with the industry.

(d) This conference is the first one and now should be followed up by a task group.

(e) A further extension of this will be the formation of an association of food manufacturers for development of new protein foods.

DISCUSSION GROUP E

TOPIC: How can concerned organisations organise themselves in order to speed up the development of new, improved foods.

RECOMMENDATIONS

This Group E recommends the establishment of an all-India body to co-ordinate the efforts of scientists, industrialists and Government to meet the grave national emergency caused by the protein gap. This body should be based on the voluntary co-operation of those committed to these objectives.

(Continued on next page)

HUNT FOR SUBSTITUTES IN PACKAGING INDUSTRY

BY "YECHANNA"

INDIA'S imperative need to conserve as much foreign exchange as possible by spending less on imports and her sustained efforts towards earning more and more foreign exchange through the export of her products bring into focus a new trend in the fast developing packaging industry. On account of the shortfall in the foreign exchange allocation for the import of tin plate, the most widely recognised and effective raw material for packing, especially where long shelf-life is to be ensured, the packaging industry has had to look for substitutes. This search for substitutes has not been without its teething troubles both for the manufacturers of containers and those making use of the packages.

To ensure the minimum expenditure of foreign exchange on the import of tin, the Government of India called upon the consumers to make judicious use of whatever supplies were made available to them. While the manufacturers of containers for food products were allowed to use limited quantities of this valuable raw material, those who catered for non-food items were banned from using tin plate for their packages. This curb has been in force since 1963-64. A certain quantity of tin plate was also set aside for export products and cans were released to the factories as and when they received export orders.

TOO MUCH FUSS

It is relevant to note here that apparently quite a fuss has been made of the foreign exchange component involved in making available pure tin to the packaging industry. As a matter of fact, to meet the demand for 1,30,000 tons of tin plate, only 1,300 tons of pure tin are needed. One ton of tin plate can be used, it is said, for Rs. 75,000 worth of consumer goods. In this one ton of tin plate, there would be a maximum of only 1 kg. of pure tin, if made by electrolytic process. In other words, the foreign exchange cost will be negligible in one ton of tin plate.

It is on account of the inadequate rolling capacity of the existing plants that the packaging industry has been facing the problem of shortage of tin plate. With the commissioning of the Rourkela reduction plant for rolling tin plate in the near future, the supply position is expected to be easier.

Be that as it may, the tin shortage may well prove to be a blessing in disguise inasmuch as it has already led to a conscious effort on the part of the leading units in the packaging industry in the country to try out new raw materials such as high density polythelene and laminate of aluminium, to mention only two examples. It is relevant to point out, in this connection, that in this world of fast developing technology, in every field of industrial activity, the packaging units in the advanced countries have been breaking fresh ground in the choice of its raw materials and, in the process, slowly dispensing with conventional materials in favour of more sophisticated raw materials.

UNENVIABLE TASK

Although in the present stage of India's development, with special reference to the late start of the plastics industry and the petro-chemical complexes, the packaging industry in this country has indeed the unenviable task of finding suitable substitutes, price-wise, for tin, to cater for the domestic consumers, the long-term advantages on the export front, through the production of sophisticated packs, cannot be underestimated.

The need for conserving foreign exchange on the import of tin plate has been fully appreciated both by the manufacturers of the containers and leading units engaged in the production and sale of canned food and non-food items. Thus, a leading unit manufacturing tin containers has cut its use of imported components to the minimum. The vanaspati industry has completely stopped the use of smaller

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(Continued from previous page)

Group E feels that this body could perform any or all of the following functions:

1. To promote acceptance and use of protein foods and beverages.
2. To bring together parties interested in the use of protein with those having the raw materials, the know-how and the capital.
3. To act as liaison between Government and those committed to promote the use of protein food and beverages.
4. To undertake work difficult to be undertaken by individual units for promotion of protein foods and beverages.

It is suggested that such a body should be assured of sufficient funds for the first 3 years, to be provided by the concerned Indian industries. It is estimated that the yearly administrative expenses of such a body in the first three years would be Rs. 10 lakhs.

This body should be a self-supporting organisation and should charge a reasonable fee for its services. For its programmes and projects, it may accept funds from Government and international aid agencies.

In conclusion, it is, therefore, suggested that an **ad hoc** body be set up **today—and now**—to go into further details of these recommendations and to submit a report to the Chairman of this Conference by the 30th August, 1967. This **ad hoc** body should consist of not more than 7 people from the participants in this workshop. To enable this **ad hoc** body to function, it is necessary to raise Rs. 50,000 and it is suggested that participating firms and companies each pledge today Rs. 1,750 for the purpose.

containers and has switched over to selling their products in bigger containers with a capacity of 2 kg., 4 kg. and 16.5 kg.

Till recently, because of the continued shortage of edible oils, the marketing of larger containers by the vanaspati units has had no adverse effect on sales. A leading vanaspati unit, for instance, is now concentrating its attention on making a series of tests to find out substitutes for tin plate such as PVC and polythelene as also composite packs made of cardboard with metallic ends fitted on with a view to ensuring the maximum protection to the contents.

In the search for substitutes in place of tin, care is taken to see that the new raw materials bestow the same advantages as tin plate. Tin plate, it is very widely recognised, is sturdy and robust and as such completely weather-proof. The quality of polythelene at present produced in this country is not sufficiently high as to provide complete protection to the contents from the elements. This is especially so in a country with a tropical climate with its associated vagaries of the weather.

As and when high density polythelene is produced in sufficiently large quantities in India, this lacuna could be expected to disappear. The low density polythelene that is easily available now has not been found suitable for packing vanaspati.

The advantages of using glass in place of tin plate have also been tried. Glass, involving four different inventories, seems to have quite a few drawbacks, the freight element being particularly frightening. Apart from the breakage risks associated with glass, as a raw material for packages, there are also problems of filling. Tin plate containers generally lend themselves easily to high speed filling at the rate of 40 a minute and that almost irrespective of the size. It is also to be noted that glass conainers imply a search for outer packages too, adding an extra element in cost.

Packaging experts are of the view that high density polythelene holds the key to the problem of finding an effective substitute for tin plate. With the further growth and development of the plastics industry in this country, a sufficient quantity of polythelene of the requisite quality is expected to be produced and marketed at reasonoble prices. In fact, if the current bottlenecks that hamper the speedy development of the plastics industry are removed by the Government, the authorities would indeed be helping the erstwhile users of tin containers a great deal.

TRIALS WITH PAPER

As has already been stated leaders in the vanaspati industry are doing everything possible to exercise self-discipline in the use of tin by trying out different substitutes. The use of laminate of aluminium on either side of a paper packing material has been tried. This method, however, is said to be very expensive and will remain so pending a mark-up in the production of laminates.

Do you get
this kind of
service
with the packages
you buy?
Check.
Cannery layout service
Expert advice on canning technology
Guidance on the right kind of package for your product
Evaluation of the usefulness of various finishes, internal lacquers, varnishes, coatings and printing inks
Assessment of product/package compatibility, performance, shelf-life
Paper labels designed for the market
A range of high-speed seaming machinery
Comprehensive after-sales service
You will,
at Metal Box
Remember, too, that every Metal Box product and service is backed by the Company's long manufacturing experience in India plus the advanced know-how of their associates —acknowledged world leaders in packaging.
MB 3628A
METAL BOX
Metal, Paper and Flexible Packaging
MB

By making use of paper instead of foil on the outside of the container, storage and transit trials have been made with fairly satisfactory results. It is also to be noted that once greater progress is made in the electrolytic tinning process, it is bound to lead to increased conservation of pure tin, unlike in the case of the hot-dip process.

In whichever direction attempts are made to find substitutes for tin, there is need to bear in mind the distinct advantages that are associated with tin plate which prevents rust and enables quick soldering. This apart, printing stands out in bold relief on tin plate, a very important sales point.

ACCENT ON SALES APPEAL

Much more than the protection and preservation of what is contained in the packages is the need for presentation, with the accent on sales appeal. This is especially so in respect of products meant for export. Not infrequently Indian products, otherwise well-qualified to compete with those made by the advanced countries, have had to suffer losses due to poor presentation of packages.

It is relevant to recall here the observations of an American marketing expert who said that he had seen many Indian goods beaten to death in the international markets, just as good in quality as any foreign goods, because "your packaging was atrocious".

It is, no doubt, true that the package should have the primary responsibility of protecting the contents from humidity and atmospheric changes in transit besides being pilfer-proof. In the context of the very difficult times that the country has been passing through on the export front, in the wake of the devaluation of the rupee, even in respect of traditional items of export, it is of paramount importance that packaging, an essential element in scientific marketing, should be given the utmost care in export products.

In so far as competition in the world markets is severe, each country vying with the others to woo more and more customers, there is verily a built-in safeguard against indifferent packaging. Even so, it is essential to remember that it is the taste and preferences of the overseas consumers, whether in respect of the quality of the contents, the shape and size of the containers or the colour scheme and designs on the pack, that should be the factor determining the type of packaging that is most appropriate for a particular product in a particular market. Experts have pointed out the immense potentiality of Indian motifs, with historical and cultural allusions, that could well be exploited to the advantage of the Indian exporter.

KERALA ACHIEVEMENT

A case in point is the phenomenal jump in the export of canned shrimp from Kerala to the American markets in the last ten years. It is on account of the greatest care taken in the matter of processing and packaging, on a par with the international standards, that this feat became possible.

Unless an exporter is in a position to sell what the foreign buyer wants to buy and not what the shipper happens to have a surplus of, not much progress could be made in the foreign markets. By and large the overseas buyers set great store by the quality of the products they buy. They are also acutely conscious of convenience packing as most of them have to do shopping at department stores where self-service is very popular. In such shops it is the package with personality that wins the housewives' admiration and thereby wins the battle for the exporter.

COST FACTOR

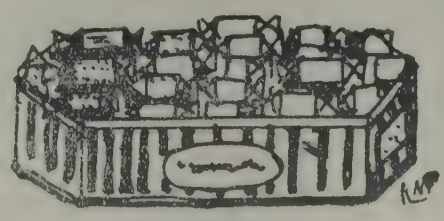
It is clear from the foregoing that effective packaging has a very vital role to play in the marketing of goods. Although variety in packaging, particularly in consumer products, is essential for boosting sales, the existing raw material situation calls for earnest attempts towards not only variety reduction but also cost reduction.

The Indian Institute of Packaging, set up by the Ministry of Commerce, with the active participation of packaging and allied trades in India has already made some headway in focussing public attention on important problems of the packaging industry.

The Institute organised seminars in Bombay and Calcutta towards the end of last year on "Packaging For Export" in association with the Asian Productivity Organisation and the National Productivity Councils in the respective centres. In March this year, another seminar was organised in Delhi on "Variety Reduction in Packaging" in collaboration with the Indian Standards Institution. The recommendations and conclusions of this seminar are now under implementation by the various sectors of the industry and the concerned Government departments.

The Institute held earlier this month a three-day seminar in Bombay, choosing for its subject "Cost Reduction in Packaging". The seminar was inaugurated by Mr. P. L. Tandon, Chairman, Hindustan Lever, Ltd., and provided scope for detailed discussion on the pressing problems of cost reduction by competent experts in the packaging industry as also in the different departments of the Government of India, connected with the packaging industry. The seminar provided guidelines for lowering the cost of packages without sacrificing the functional requirements.

Some of the important subjects discussed at the seminar included cost reduction through material saving in bulk packaging, basic factors in the cost of aluminium foil, polystyrene foam in transit packaging and development of the most economical package for a given product.



DEVELOPMENT OF POULTRY INDUSTRY

By a Correspondent

THE Government of Maharashtra had no intention of competing with private enterprise in the poultry industry, the Finance Minister, Mr. S. K. Wankhede, assured the western region conference of the All-India Association of Poultry Industry in Bombay on August 25.

In a mixed economy, the private, public and co-operative sectors had equally important roles to play, he stated while inaugurating the business session of the conference.

Mr. Wankhede referred to a remark made by the president of the association, Mr. S. B. Saran, and said that the State Government, which believed in decentralised planning, would accept suggestions from experts in the poultry industry.

MARKET SERVEY URGED

In his introductory speech, Mr. Saran suggested that the association should be associated with planning at the State level. The Government should see that its poultry industry schemes were financially feasible.

Mr. Saran further proposed that a market survey should be made to determine the demand for eggs and chickens at different price levels.

Mr. J. A. Wood welcomed the Minister and Mr. N. J. Aga proposed a vote of thanks.

Reports were presented by Mr. A. G. Merchant, convener of the Feed Ingredients Committee; Mr. R. G. Advani, Marketing Committee; Mr. V. A. Mohile, Management & Technical Committee; and Mr. M. B. Desai, Taxes, Laws and Finance Committee.

The conference unanimously passed resolutions, suggested by the Feed Ingredients Committee, requesting the State and Union Governments to :

1. make proper arrangements for drying the stock of wet food grains landed from the ships in order to prevent wastage of this valuable feed ingredient;

2. establish a more efficient machinery so as to eliminate any delay in the allocation of damaged food grains to the consumers, in order to prevent unnecessary deterioration of the stocks;

3. to allocate an adequate quota of the damaged food grains to the poultry industry for distribution in consultation with the association;

4. to allow the free movement of maize purchased by **bona fide** farmers and feed manufacturers in the rationing zones;

5. to increase the quota of wheat bran to the poultry industry as soon as additional supplies are available, and

6. to give the highest priority to the molasses requirement of the poultry industry.

The resolutions processed by the Management and Technical Committee, and passed unanimously were :

1. for acceptance as a pilot project the scheme presented by the Management and Technical Committee for setting up a diagnostic laboratory;

2. for approaching the government and other institutions for financial assistance for the scheme;

3. for the appointment of a committee to study the implementation of the scheme and the submission of a detailed report within 30 days of the appointment of the committee.

A resolution brought forward by the Marketing Committee said that the egg cold storage and financing scheme, as presented at the conference, be implemented in consultation with and the approval of the executive committee of the association.

The Taxes, Laws and Finance Committee presented the following resolutions, which were unanimously passed :

1. requesting the State Government in the western region to exempt chicks, live poultry and dressed poultry from sales tax and place poultry equipment on a par with agricultural equipment;

2. calling on the association to urge State electricity boards in the western region to charge electricity to poultry farmers at agricultural rates;

3. urging the Gujarat Government to abolish sales tax on poultry feed and poultry feed supplements;

4. explaining to the Agricultural Finance Corporation formed by commercial banks the requirements of the poultry farmers with regard to finance;

5. suggesting to the State Governments in the western region to exempt poultry medicines from the Sales Tax Act, and

6. approaching the industries departments of the State Governments to allot certain quota of galvanised iron sheets to the manufacturers of poultry equipment to be procured directly from the manufacturing plants at factory rate.

NEED FOR COST REDUCTION IN PACKAGING STRESSED

MR.P.L. TANDON, Chairman, Hindustan Lever Ltd., highlighted the vital need for scientific packaging in a developing economy while inaugurating a seminar on "Cost Reduction in Packaging" organised by the Indian Institute of Packaging in Bombay on September 4.

Packaging is "much more than its popularly misunderstood role of luxury and attractiveness." It is "the very preservation of the product itself which poor and developing societies cannot ignore", Mr. Tandon said and dwelt on some of the basic issues connected with packaging.

Poor societies, according to him, are "wasteful" in the use of resources; often they cannot help it. They have wrong priorities for expenditure and costs and these themselves add to their costs. They often cannot help the priorities such as social expenditure ahead of production. In their attempt to harness their meagre resources, particularly foreign exchange, they have to plan and shelter their economies and thereby push up the costs. In their desire for fostered growth, cost is sacrified in the interests of quick development.

Their packaging costs are high because the consciousness of packaging comes at a relatively high level of sophistication; at lower levels it is considered not a necessity, in fact, it is considered a luxury, importance being given to the product itself. This leads to further waste and uncompetitiveness in exports.

In the event, inflationary pressures and rising prices result and mount up to the point where governments have to take forcible measures to reduce prices through devaluation, price control and other regulatory measures.

NO SHORT CUTS TO GROWTH

Mr. Tandon pointed out that there were no short cuts to growth. Haphazard methods would not do and could easily retard growth. There was need, therefore, to be conscious of three fundamental issues, namely. production of goods, their packaging and marketing.

By packing one does not only mean cartons and containers but everything that goes to wrap, cover, contain, store and convey the product from the point where it is produced—be it in the field or the factory —to its ultimate consumption. Poor containing and conveying could lead to avoidable wastage.

In the context of the difficulties faced by this country on the foreign exchange front, packaging for export gains added significance. In this connection, Mr. Tandon said that what we did at home for domestic products would not be sufficient to meet the requirements of developed societies where people were more accustomed to getting sophisticated packs.

"Irrespective, therefore, of the poverty of our own resources, we have to package our products in the way in which the more affluent societies are used to receiving them. We can meet these requirements by importing the packaging materials. But one cannot always leave things at the ambivalent level of a packaging for home and another for overseas. In order to improve packaging for exports, we must, in the long run, improve our packaging at home because only from the strong base of a good packaging industry can come the right packaging for exports."

In this context, Mr. Tandon referred to the systematic salesmanship adopted by the Japanese whether to attract buyers in Tokyo or New York. While a Japanese department store is kept very attractive both in Tokyo and in New York, India's trade and display stores overseas are drab and unattractive. The goods they sell and the packaging and the display are after all only of the standard at home.

SPARE THE CONSUMER

While pointing out the need for cost reduction in packaging, Mr. Tandon drew particular attention to the need of the packaging industry to see that the cost of packaging did not become an undue burden on the consumer. The packaging industry, he added, should not content itself with producing anything-that-goes-at-any-price-the-traffic-will-bear.

Packaging should be good as well as be reasonably priced. Both these aspects, he said, suffered at the hands of the Government and also of the industry. Government did little to encourage proper packaging and not infrequently the heaviest imposts were placed upon packaging materials. The industry was also not particularly conscious of the needs of packaging and its attitude often was "anything-will-do". "Both seem to think of production as being of prime importance and packaging not a necessity", he added.

He, however, declared that the packaging industry should consider it its responsibility to undertake research and development programmes and institute studies on consumer preferences and take steps to bring about cost reduction in the ultimate interests of the consumer.

BABY FOOD MANUFACTURE IN BRITAIN

By **DAVID STEPHENS**

AT first a baby depends entirely on milk, but after a few weeks it can be given baby cereals. Strained foods not only complement the milk but are a convenient way of introducing a baby to new textures and different tastes. Of course, there is no need for any mother to spend money on cans, jars, or packs of baby foods. She can make a variety of baby foods at home, provided she is willing to spend the time and, in some cases, the extra money.

But there is another consideration: it is difficult to prepare small quantities, to ensure that everything is sterilised and to produce the well-balanced variety that is provided by the baby food manufacturers.

In fact, in Britain today approximately £12,000,000 is spent every year, on more than 300,000,000 cans, jars and packs of strained, junior and cereal foodstuffs and a further £8,500,000 on milk-based infant foods. These vary in chemical composition and in vitamin and mineral content.

Full cream products are by far the most widely used. In recent years doctors have been recommending the feeding of full cream milk at an earlier age and their predominance has increased.

All the same, half cream or "modified" products are more easily digested and are usually recommended for normal babies during the first weeks of bottle feeding.

A MEANS OF WEANING

Whereas babies used to be fed on a sole diet of milk until they were eight or nine months old, it is now common practice to start mixed feeding at three or four months. Indeed baby foods are used as a means of weaning a baby from his initial all-milk diet to his joining in with the normal family meals. On average a baby will probably take to strained foods at about two to three months and to junior foods (with the consistency of thick cream) at eight to ten months. And he may continue to be a substantial consumer until he is at least 18 months old.

The market is dominated by Heinz with a lion's share of roughly 83 per cent. From 1947 until a few years ago Heinz were almost the only producers of any substance—other manufacturers such as Libbys, Nestles, Batchelors and Scott-Brand tried their hand, but with shortlived success. In 1964, however, Heinz met their first serious competitors in Gerber, another American firm with the biggest share of the baby food business in the United States. Within two years Gerber had taken over about 15 per cent of the British market; this is said to have dropped back by about two points this year.

The remainder of the market is covered by such firms as Trufood, Robinson's, Farleys, Farex, Glaxo Laboratories and Unigate. There are little, if any, nutritional differences between the brands. And they are as nutritious as—and, perhaps, cheaper and more convenient than—home prepared ones.

DIFFERENCES IN PACKING

But each manufacturer has something individual to offer. One of the most obvious differences is the way the foods are packed. Heinz who use both jars and cans say that neither has any advantage over the other except that the cans work out somewhat cheaper because they can be sterilised more rapidly than jars.

Gerber and Trufood, on the other hand, feel that jars have a psychological appeal to mothers, who like to see what they are buying, and, somehow, jars seem cleaner. Robinson's baby foods are sold in dehydrated form to be reconstituted with warm, boiled milk or water, similar to making up instant coffee.

Trufood are the only people to homogenise their baby foods, and this extra process puts their prices up. They feel it is worth the extra cost because, they say, it makes the foods more easily digestible; medical experts are a little doubtful about this.

Baby foods are one of the very few products which nearly always sell better on self-selection than on counter-service. Mothers seem to put a premium on being able to choose from a fairly wide range of varieties. Heinz have more than 100, Gerber more than 40, Trufood 35 and Robinson's 15.

JARS OR CANS ?

Fully aware of the possible gains glass might make at tinplate's expense, Heinz last year decided after much hesitation to make about half their range available in jars at the same price as Gerber. This meant that four and a half ounces (128 grammes) of baby food in cans would sell for eight and a half pence while the same quantity of the same product costs ten pence in jars; seven and a half ounces (212.6 grammes) of junior food in cans sells for 1s. 1d. and in jars for 1s. 3d. The all-important question was: "How many British mothers will pay, and go on pay-

(Continued on next page)

NEW PRODUCTS AND PROCESSES

NEW INSTANT COFFEE

THE latest to join the family of ready-to-serve drinks is Bon instant coffee, launched by Brooke Bond India Private Ltd. Packed in air-tight sealed containers, Bon instant coffee is now on sale, supported by a national press advertising campaign. "Reach for a tin of Bon today . . . the instant coffee that's rich, aromatic, robust . . . unique because of its roasty, roasty flavour!" goes the ad line. A 50-gram tin of the instant coffee costs Rs. 3.25.

SUBSTITUTE FOR SUGAR

With the acute shortage of sugar, new sweetening agents are coming into vogue. Widely advertised as a non-calorific sweetener for coffee, tea and cold drinks, Di-cyclamate, introduced by Bombay Tablet Manufacturing Company, has come as welcome news to the harassed housewife ever in search of new substitutes for sugar. Needing only two tablets to make a cup of tea or coffee, Di-cyclamate leaves no bitter after taste, says the ad. The tablets can be used to prepare sweets too, the manufacturers claim.

BLENDED MILK

Experimental production of toned milk based on a mixture of animal milk and reconstituted vegetable milk has been started in a dairy in Bangalore, says the annual report of the Council of Scientific and Industrial Research for 1966-67, which was presented to the Lok Sabha last month. Feeding trials on school children are already in progress, the report adds.

NEW SUGAR PLANT CUTS COSTS

A sugar plant, employing a newly-evolved "Sutek" system to avoid wastage in manufacture, has been introduced by Teknoworks (India) Ltd., it was stated at a press conference in Bombay.

Explaining the process, Technoworks experts told newsmen that the system was well suited for automatic package type of plants with manufacturing capacity of 50 to 800 tons of sugar per day.

The "Sutek" process, it was stated, had improvised the method of production of khandsari sugar and jaggery in such a way that the losses of sugar in the residual bagasse were reduced to the minimum. The losses in molasses also could be reduced and the quality of the finished product improved for bye-product industries.

Another feature of the "Sutek" system was that the plant could be switched over to the manufacture of raw sugar for export or jaggery. The plants were so designed that they could manufacture refined khandsari sugar, plantation sugar, raw sugar, jaggery and liquid sugar.

MECHANICAL TEA CHEST OPENER

The world's first mechanical tea chest opener, which saves considerable time and manpower, is to be manufactured in India by Brooke Bond India Private Ltd.

The device, designed by a firm in Britain, can delid tea chests or the contents.

To be manufactured by the engineering department of Brooke Bond India Private Ltd., the machine is fully automatic and self-adjusting to suit a wide range of chest sizes.

All operations can be controlled by a single operator from a free-standing console containing all controls. The machine is fully guarded and fitted with magnetic safety switches.

(Continued from previous page)

ing, the extra 1½d. or 2d.?" In the U.S.A., after all, jars had completely taken over from cans as far back as the early 1950s.

But it is as well to bear in mind that in terms of sheer quantity cans continued to represent something like three-quarters or more of total output. And it means that Heinz have been offering the same amount of baby food about 20 per cent cheaper than Gerber. According to information released by the organisation in June, Heinz pushed sales up by ten per cent in the business year ending in April, while expanding the total market by six per cent. Clearly, its assumption that the future of the baby food market in Britain lay in cans has been vindicated.

ADVICE TO MOTHERS

All the four manufacturers offer feeding advice and assistance to mothers. Every year Heinz answer 6,500 letters and distribute 1,000,000 copies of a booklet. Gerber answer up to 800 letters a week on feeding problems.

Trends & Topics

WHEAT PRICE BASED ON PROTEIN CONTENT: A NOVEL SUGGESTION

MR. M. S. Swaminathan, Director of the Indian Agricultural Research Instutute, made a novel, though exteremely relevant, suggestion the other day when he said that wheat farmers should be paid on the basis of the protein content of the wheat they grow. Such a system will help to introduce a new element in price fixing for wheat. A similar scheme is in operation for sugarcane whose prices are based on its sucrose content.

As things are, the farmer gets the same price whether he produces high-protein or low-protein wheat. It will be good to pursue Mr. Swaminathan's suggestion more vigorously if only because it will help to widen nutrition-consciousness in the country. It is, therefore, gratifying to note that the Institute will soon take up the question of assessing the protein-content of wheat in certain selected centres.

FINE FOODS EXHIBITION

IT is just as well that the Indian food industry has decided to take part in Anuga, the international exhibition of fine foods and provisions to be held in Cologne from September 30 to October 8, 1967. On a net display area of 1,050 sq. ft., the Indian food industry will exhibit such important export products as tea, coffee, tobacco, spices, cashewnuts, fruits, vegetables and fish preserves.

The industry's decision to participate in the exhibition should go some way towards improving India's trade in food products with West Germany. So far, India's share in West Germany's import trade has been rather small. Of the total food imports in 1966 amounting to 17.5 milliard D.M. (16.9 milliard D.M. in 1965) imports from India accounted for only 49 million against 43 million D.M. in 1965; tea accounted for the major part of India's exports at some 23 million D.M.

A notable feature of the exhibition is the technical centre which accounts for nearly 30 per cent. of the total display area. Here, packing materials and machines, refrigeration equipment and frozen foods and shop fitting and equipment are on display. Some 180 firms are expected to offer packing materials and machines for the food industry and food wholesale trading. There are also experts who can advise on how the food industry's products should be packed.

SOLVENT-EXTRACTED OIL

THE use of solvent-extracted oil and the de-oiled meal left over after extraction of oil will be permitted for edible purposes under conditions laid down by the Solvent-extracted Oil, De-oiled Meal and Edible Flour (Control) Order, 1967, issued by the Food Ministry in March.

This means that solvent-extracted oil can be used in the manufacture of vanaspati or refined oil.

However, certain precautions are to be taken to ensure that the oil-bearing material subjected to the extraction process is clear, sound and free from extraneous material and that only a food-grade solvent conforming to international standards is employed in the process. The oil has also to be refined and deodorised before use.

The order is administered by the Directorate of Sugar and Vanaspati.

RICE MILLS TAKE-OVER

THE Government of India is considering the question of giving financial aid to State Governments to enable them to take over rice mills. Meanwhile, the programme for setting up rice mills in the co-operative sector is being steadily implemented. Of the 794 mills to be set up in this sector, 362 have already been set up. The Government is awaiting the evaluation report on the Japanese mill it imported some time ago. Further installation of such mills will depend on the report. The Government is, however, stated to be anxious to encourage indigenously manufactured rice mills.

TRAINING FARM

The Government of India has signed an agreement with the Food and Agriculture Organisation to set up a demonstration and training farm for young farmers at Visakhapatnam with the assistance of the Australian Committee for Freedom from Hunger Campaign. Under the scheme a demonstration and training farm in poultry farming and market gardening will be established by the Young Farmers' Association of India on a 100-acre tract provided by the Visakhapatnam Municipality near the city.

COMPANY NOTES

HINDUSTAN LEVER TURNOVER UP

THE half-yearly results of Hindustan Lever Ltd. have shown that the turnover has risen by 21 per cent. to Rs. 5,151 lakhs from Rs. 4,265 lakhs in the first half of 1966. The turnover for the whole of 1966 was Rs. 8,467 lakhs. However, profit before taxation has shown a decline from Rs. 302 lakhs to Rs. 281 lakhs during the period and profit after taxation from Rs. 132 lakhs to Rs. 123 lakhs. The provision for taxation on profit claims Rs. 158 lakhs in the first half of 1967 against Rs. 178 lakhs in the corresponding period of 1966.

The increased cost of production and price control on vanaspati are said to be mainly responsible for the fall in profit margins during the first half of 1967. The company hopes that the outlook for the second half of the year will be more encouraging as a result of the improved raw material position and the partial relaxation of production control on vanaspati.

L & T RIGHTS ISSUE

Larsen & Toubro Ltd. has been permitted to issue capital of Rs. 99 lakhs in 9,90,000 equity shares of Rs. 10 each for cash at par. The shares will be offered on a rights basis in the ratio of three shares for every eight held.

The company was expected to maintain the dividend for the current year at 15 per cent. on the increased capital resulting from the rights issue, the Chairman, Mr. Holck-Larsen, told the shareholders at the annual general meeting. The rights shares, expected to be issued in November, would rank **pari passu** with the existing shares for dividend, he added.

Mr. Holck-Larsen said the board had considered the question of a bonus issue but had come to the decision that the shareholders' interest would not be served unless the dividend on the capital thus increased could be maintained. He hinted that the board might reconsider the proposal later.

The Chairman reported that sales for the first four months of the current year were higher by about 20 per cent. at Rs. 2.52 crores against Rs. 2.10 crores for the corresponding period of the previous year. The output too had risen by 27 per cent. The company had received a huge order worth Rs. 2 crores from the Atomic Energy Establishment.

TOMCO DIVIDEND

The Tata Oil Mills Co. Ltd. has proposed a higher equity dividend of Rs. 3.75 per share for the year ended March 31 against Rs. 3.50 per share for the previous year.

ALEMBIC GLASS SKIPS

Alembic Glass Industries Ltd. has skipped the equity dividend for 1966 in view of the decline in profits and the need to conserve cash resources for the current year.

The report for the year says that the company's work was hampered by the unsatisfactory first year working of the Bangalore factory. The company has reported a lower gross profit of Rs. 42.56 lakhs for the year against Rs. 52.25 lakhs for the previous year in spite of a rise in sales from Rs. 2.68 crores to Rs. 3.02 crores.

JAGATJIT INDUSTRIES

Jagatjit Distilling and Allied Industries Ltd., manufacturers of Ovaltine in India, has reported a higher gross profit of Rs. 31.27 lakhs for 1966 against Rs. 15.77 lakhs for the previous year following an increase in its sales from Rs. 1.13 crores to Rs. 1.99 crores. The company, which has proposed an equity divided of 10 per cent., has provided Rs. 3.94 lakhs for depreciation (Rs. 3.03 lakhs) and Rs. 2.28 lakhs for development rebate reserve (Rs. 19.110), leaving a net profit of Rs. 14.66 lakhs against Rs. 3.01 lakhs in the previous year.

STEEL CONTAINERS

After providing Rs. 82,132 (Rs. 36,432) for depreciation, Steel Containers Ltd. has made a profit of Rs. 8 lakhs (Rs. 13.38 lakhs) for 1966. Taxable ordinary dividend of ten per cent has been declared on the increased capital against 15 per cent. Taxation gets Rs. 4.27 lakhs (Rs. 8.98 lakhs) and general reserve Rs. 3.48 lakhs (Rs. 4.22 lakhs).

POYSHA ISSUE

Poysha Industrial Co. Ltd., at its extraordinary general meeting in Bombay, resolved to increase the paid-up capital by Rs. 35 lakhs and offer for public subscription 35,000 preference shares of Rs. 100 each for cash at par. The authorised capital is being raised from Rs. 1.50 crores to Rs. two crores through the creation of 50,000 preference shares of Rs. 100 each.

FOCUS ON RESEARCH

PROTEIN FROM PETROLEUM

BACTERIA are the lowest form of animal life. Yet some day they may provide man with a major new source of food – from oil and natural gas.

Scientists in the United States and elsewhere already have put bacteria to work on an experimental basis, converting petroleum and natural gas to protein-rich synthetic food.

The process is known as biosynthesis, or petroleum fermentation. Many researchers believe it can be developed for commercial use on a large scale, particularly in parts of the world critically short of food. For, many of these same areas have an abundance of oil and natural gas.

DIETARY DEFICIENCY

Commercial production of food from fuel not only would swell the world's total supply, but would increase significantly the amount of available protein – absolutely necessary for health and growth.

It is not so much the quantity as the quality of food that is lacking in the world. Protein deficiency is the major problem. Millions of people subsist on diets that provide nowhere near the protein needed.

Experts figure that an adult's diet should consist of about 14 per cent. protein. Children need more, up to 20 per cent. Consumption of low-protein food, no matter how much, still leaves the individual malnourished.

Natural protein is most abundant in fish and animal product – meat, milk, cheese, eggs. And it is these very products that are most scarce in less-developed lands.

Scientists say food from oil and natural gas contains more protein, pound-for-pound, than any meat. It also is rich in vitamin, another diet necessity.

Bacteria make food from fuel in much the same way that yeasts are produced for leavening bread. The one-celled bacteria consume hydrocarbons in the oil and natural gas, yielding a yeast-like protein.

The protein is whitish and powdery, like flour, and nearly tasteless. It can be processed into protein and vitamin concentrates, and a variety of synthetic foods – biscuits, cereals, cookies, soups, sauces.

Biosynthesis is not new. Such familiar products as beer and yoghurt are derived partly from fermentation processes that depend on micro-organisms similar to those used in petroleum fermentation.

What is new is the prospect of making commercial use of the process with petroleum and natural gas as raw materials. Considerable progress has been made in recent years, and some researchers believe commercial production can be a reality in a few years.

Better milk with aid of nuclear energy

Better and healthier milk and a more economical handling and canning of milk and milk products can be obtained with the help of nuclear energy. A seminar on the use of radioisotopes and technology, organised by the International Atomic Energy Agency (IAEA) and the Food and Agriculture Organisation (FAO), not only confirmed this fact, but also showed the great and so far insufficiently exploited potentialities of the new techniques in this field.

Particular economic importance attaches to automatic devices using radioisotopes to control the filling of milk bottles and other containers. By using radioactive gauges, often considerable losses incurred could be avoided. "Over-fill" often results from the need to comply with regulations as to the actual content of food containers.

Such automatic control can also play a significant role in large-scale-ice cream manufacturing. Continuous control of the amount of air being incorporated into the product at the time of freezing was of "tremendous economic importance", it was stated. A 40% improvement over manual control had been obtaned with a radioisotope device.

Cleanliness being of supreme importance in the handling and processing of dairy products both from the health and marketing points of view, particularly sensitive means to test cleaning methods are needed as well as to test the cleanability of materials and equipment. **By adding 14C radioactive carbon labelled tracer to material with which the surface of equipment was deliberately soiled and subsequently cleaned, remnants of the soil could be detected when no more than two billionth of a gramme of the substance was left per square centimetre.** Bacterial remnants could be detected by using bacteria rendered radioactive by feeding them with phosphorus labelled nutrients.

REORIENTATION OF GOVT.'S SUGAR POLICY URGED

A strong plea for a reorientation of the Union Government's policy in regard to sugar, gur and khandsari was made by the President of the Sugar Technologists' Association of India, Mr. Shantilal K. Somaiya, at the two-day seminar on "Milling and Clarification" held in Madras recently.

He said that the Government's policies should keep three basic factors in view. First, under controls, the sugar industry had no capacity to compete with gur and khandasari for sugarcane. Secondly, there is need to curb the diversion of cane to gur and khandsari by raising the sugarcane price. Thirdly, there should be equally rigorous controls on gur, khandsari and sugar or sugar should be totally decontrolled to enable it to compete for cane.

SUGARCANE PRICE

Mr. Somaiya said the Government should concede the demand of the Indian Sugar Mills Association for the raising of sugarcane price to Rs. 3 per maund at 9.8 per cent. recovery of sucrose.

There was also need for re-examining the present policies of fixing the control prices of sugar and the adequacy of the return to the industry. Inadequacy of funds prevented a major section of the industry from modernising and improving its efficiency, said Mr. Somaiya.

He pointed to the colossal waste involved in the manufacture of gur and khandsari compared with sugar.

While the average extraction from cane in the case of sugar was 92 per cent., in the case of gur and khandsari it was 55 per cent. At the maximum, it was 62 per cent. There was thus a loss of 30 per cent.

CRIMINAL WASTE

Mr. Somaiya stated: "In any scheme of things, this waste is serious, but in a period of sugarcane shortage, this waste is unpardonable, almost criminal. Sugar production had fallen from 3.55 million tons in 1965-66 to 2.15 million tons in 1966-67. "Assuming that this fall in production is due to the diversion of sugarcane to gur and khandsari, the same quantity of sugarcane gave us 900,000 tons of these sweetening agents (gur and khandsari) instead of 1.4 million tons of sugar. Thus, there is a net loss of 500,000 tons of sugar on account of poor extraction."

"Translating in financial terms, while the Government has lost in revenue more than Rs. 50 crores (excise and cess) due to the shortfall of 1.4 million tons in sugar production, the nation has lost sugar worth Rs. 50 crores (excluding taxes), being the value of 500,000 tons lost in extraction alone."

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FOOD NEWS

RISE IN EXPORT OF CASHEW KERNEL

THE steady rise in the export of cashew kernel and shell liquid noted in the first four months of 1967 has been maintained. Nearly Rs. 23 crores was earned through exports between January and June against Rs. 16 crores during the same period last year.

In the January-June period, 26,800 tons of cashew kernel valued at Rs. 22.23 crores was exported compared with 24,800 tons worth Rs. 14.92 crores. The export of shell liquid fell to 4,700 tons (Rs. 75 lakhs) from 6,300 tons (Rs. 87 lakhs).

The United States continued to be the biggest importer of Indian cashew kernel. The Soviet Union stood second. While the U.S. imported 12,000 tons of kernel against 12,360 tons, the U.S.S.R. increased the offtake from 7,300 tons to 7,500 tons. East Germany was the third largest importer of cashew kernel from India.

MAHARASHTRA CASHEW TARGET

A target of 24,000 acres has been set for cashew by the Agriculture Department of the Maharashtra Government for 1967-68. Of this area, 20,000 acres will be in the Bombay Division and 4,000 in the Poona Division. Plantation work under the scheme has been started in Ratnagiri, Kolaba, Thana and Kolhapur districts.

FISHERIES PROJECT

A Rs. 39-lakh fisheries project, which would include the building of 50 mechanised fishing boats, establishment of a fish meal plant and a canning factory, will be started at Puthiyappa, near Calicut. A nylon fishing net manufacturing unit will also be set up. The canning factory will have a capacity of 1,000 tons per day.

GOA'S EXPORT OF PRAWNS

There was a rise in the export of prawns and frog

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legs from Goa last year. The United States imported 20 tons of prawns from Goa, West Germany six tons and Japan 5.5 tons. America also imported five tons of frog legs.

The Goa Government provides deep-freezing and storage facilities to private firms which export these delicacies.

COFFEE OUTPUT UP

The production of coffee has gone up by 6,650 tons in 1966-67. The total production was 70,000 tons against 63,350 tons in 1965-67, it was said in the Rajya Sabha by the Deputy Minister for Commerce, Mr. Mohammed Shafi Qureshi.

SOYABEAN OIL IMPORT

The State Trading Corporation proposes to import 30,000 tons of soyabean oil between June and August, it was said in Bombay by the Resident Director of the STC, Mr. H. A. Sujan.

FLOUR MILLERS' GROUSE

The Union Minister for Food and Agriculture, Mr. Jagjivan Ram, inaugurating the annual general meeting of the Roller Flour Millers' Federation in New Delhi, said his Ministry would carry out a comprehensive survey of the roller flour mill industry. It was necessary in the context of the food shortage in the country to rationalise the policy of pricing various wheat products.

The Minister referred to the complaint of the flour millers about inadequate supplies of wheat and said it was not possible at present to ensure the running of the industry to its full capacity.

The Chairman of the Federation, Mr. S. P. Virmani, represented that short supply of wheat was creating difficulties for the roller flour mill industry.

FLOUR MILLS INQUIRY

The Chidambaram Committee, which evaluated the capacity of roller flour mills, has suggested that they should be provided with facilities for improving the quality of wheat products.

The Committee's inquiry covered mills which are not registered under the Industries (Development and Regulation) Act.

The Committee suggested that the licensing authorities should evolve inspection procedures to ensure the quality of the flour mills' products and the full utilisation of the limited quantity of available wheat.

Suitable action, including the suspension of operation for a specified period, should be taken against mills turning out sub-standard products.

POULTRY INDUSTRY PLEA

The All-India Association of Poultry Industry wants the State electricity boards to charge poultry farmers agricultural rates and not domestic consumption rates for the power supplied to them.

It also wants the State Governments to abolish the sales tax on eggs and chickens, live poultry, poultry meat, equipment, poultry feed and feed supplements.

Poultry vaccines and medications should also be exempted from sales tax and excise duty.

The first meeting of the southern region of the association in Bangalore suggested that facilities for training poultry specialists should be improved, expanded and re-evaluated to suit modern poultry production techniques.

It urged the Government to ensure the supply of coarse grain to the poultry industry. It further said that smooth supply of controlled items like wheat bran, rice bran and molasses could be ensured to the poultry industry if there was one body in each State through which all applications for requirements could be processed speedily.

The meeting felt that the sale of eggs by weight and not numbers should be encouraged "in the interests of the producers and consumers."

INSTANT TEA FOR EXPORT

Two factories for manufacturing instant tea for export have been set up in Kerala, according to the Union Deputy Minister for Commerce, Mr. M. S. Qureshi. Together they will produce 770 tons of tea per year.

Proposals to set up more instant tea factories would be considered after watching their performance in production and export, said Mr. Qureshi.

TANDOORI CHICKEN

Tandoori chicken, sheekh kabab and paratha do not cause cancer.

The Union Health Minister, Dr. S. Chandrasekhar, said in the Lok Sabha that no medical proof was available yet to show that such a diet caused the dread disease.

No laboratory in India was working on the subject. Neither was there any reference to it in English medical journals. Doubts about tandoori chicken leading to cancer were raised by Dr. Carlo Citoury of Milan, Italy.

Contributions invited

Articles, preferably illustrated, on topics of interest to the food and allied industries are invited.

Whether it is a controversy to be debated, a problem to be discussed, a grievance to be voiced, an experience to be shared, an event to be recorded or an achievement to be highlighted, The Food Industries Journal provides the best medium of communication.

Contributions should be typed and normally not exceed 1,000 *words.*

FOOD SELF-SUFFICIENCY THROUGH HYBRIDISATION

SELF-SUFFICIENCY through hybridisation may well be the slogan for India which faces the stupendous task, made difficult by the vagaries of the weather, of feeding its millions.

The benefit of developing hybrid varieties of food grains has been realised by agriculture institutes and experimental farms in different parts of the country. Rice, wheat, maize and millet, the poor man's food, have been brought under the hybridisation scheme with great profit.

The University of Agricultural Sciences in Bangalore carried out experiments with the hybrid variety of IR-8 paddy and harvested a yield of 8,000 lb. per acre. This is an improvement of 30 per cent. over the high-yielding Taichung Native-1.

The director of research at the university, Dr. B. P. Patil, disclosed recently that encouraging results had been obtained in the trial growing of another variety of paddy, Taichung-65, in Mysore State.

In five districts, Mangalore, Coorg, Mysore, Mandya and Bangalore, Taichung-65 was grown on 10,000 acres last year. On an average, 6,000 lb. of paddy was harvested per acre. A farmer in Coorg claimed to have recovered a yield of 10,800 lb. per acre.

Dr. Patil said that a new variety of bajra, D-174, grown on an experimental basis, had matured in 90 days. The crop could be grown on poor soil in summer under irrigation.

NEW STRAIN OF MILLET

The university has developed a new strain of millet (ragi) which resists disease and matures in 115 to 125 days. Ragi crop in Mysore was devastated in the past two years by a disease. The university acquired a strain through the Ford Foundation which showed a high degree of resistance to the disease. The yield is 2,500 lb.

The Agricultural Research Station at Jamnagar, in Gujarat, has evolved a new variety of bajra called Hybrid-104 which is claimed to be much better than the famed Bajra-115.

The new variety stands up to drought conditions and is quick-yielding. Unseasonal rains do not harm it as much as others. Its stalk can be given to cattle as fodder.

The Agricultural University at Ludhiana in the Punjab also has developed a hybrid bajra. So far, it was considered difficult to improve the yield of this food grain.

The strain developed at Ludhiana gives twice the yield of the ordinary variety. An exceptionally good yield obtained in an irrigated field in Bhatinda was nearly 6,00 lb. per acre.

COMPOSITE MAIZE

The Indian Council of Agricultural Research has released six varieties of composite maize for cultivation this year. The advantage of this variety is that seed from its crop can be used for sowing in the next season. In hybrid varieties, the farmer has to buy fresh seeds every year.

The composite varieties have given a yield, on experimental farms, of 5,800 to 6,800 lb. compared with the normal yield of 2,000 lb. per acre of conventional maize.

In evolving the composite varieties, scientists at the ICAR tried to combine the good qualities of maize from India with those from Mexico, Venezuela, Cuba, Peru, Colombia, Antigua, Barbados and the United States.

PROTEIN-RICH WHEAT

The ICAR has also approved for general cultivation a new variety of wheat called "Sharbati Sonara-64". This amber colour wheat is rich in proteins and gives a high yield. The strain was produced at the Indian Agricultural Research Institute by treating the original Mexican Sonara-64 with gamma radiation. The Mexican wheat is red. As it was feared that the Mexican variety grown in this country might fetch a lower price than the Indian food grain of amber colour, two scientists of the institute, Dr. M. S. Swaminathan and Dr. George Vurghese, changed its colour by "genetic alchemy" which involved the bombarding of the seeds with gamma rays.

Sharbati Sonara-64 is good for late sowing. It can be grown after harvesting a crop of potato, rice or sugarcane.

The original Mexican Sonara-64 itself has given a very good yield of 6,000 lb. per acre on a three-acre plot in Bhabhnoul village, in the Shahabad District of Bihar.

LETTERS TO THE EDITOR

Readers are invited to express their views on any aspect of the food industries in this country in letters to the Editor. We shall endeavour to publish the letters in an effort to promote discussion and constructive thinking on the subjects dealt with.

Letters to the Editor should be brief and to the point.

ATOMIC FOOD PRESERVATION IS COMING INTO GENERAL USE

THE use of the atom for the preservation of food is moving out of the laboratory to the commercial food-processing industry.

The power of the atom to slow food spoilage and to extend its life without refrigeration holds great promise for the food-short developing countries where spoilage destroys an estimated one-third of fresh produce, fruits and fish before they can reach the family table.

This loss is especially tragic because much of the spoiled food is rich in protein, the lack of which in diets is responsible for most malnutrition diseases.

For technologically advanced nations, atomic pasteurization promises a huge extension of markets for fresh fish and perishable fruits and vegetables. For example, one or two days of extra shelf-life would make possible marketing southern-grown vegetables in the U.S. North-West, and would permit offering fresh shell fish from the New England coast on the shelves of supermarkets 3,000 miles (4,800 kilometres) away in the Western United States.

AEC EXPERIMENTS

The U.S. Atomic Energy Commission began experimental food irradiation 10 years ago to help develop tasty, less perishable food for the U.S. Army. Supplying troops in the field with nourishing and edible foods is a problem that stems from antiquity. However, the experience gained in these trials is likely to be of even greater benefit to the civilian sector, including the war on hunger abroad.

Atomic preservation is achieved by aiming small doses of radiation into food to kill the germs that cause spoilage. The radiation sources can be radioisotopes or electron accelerators.

With either radiation source, the food itself does not become radioactive and, thus, no radioactivity whatsoever is transmitted to the consumer. However, the dose must be strong enough to kill the spoilage-causing germs, yet low enough to avoid damage to the food's texture or alter its taste or appearance.

Radiation of fish, previously demonstrated only in the laboratory, was expanded in 1966 in the United States to commercial processing. Irradiated haddock fillets were commercially packed and shipped in ice from Gloucester, Massachusetts, to Seatttle, Washington, a distance of about 3,000 miles (4.800 kilometers). The irradiated fish held up well for 17 days. In contrast, non-irradiated fillets lasted only 11 days.

AMBITIOUS TRIALS

The successful experiment led to more ambitious trials with a large segment of the U.S. East coast fish-marketing industry. Currently, 10 large U.S. food chains with more than 8,000 retail outlets are taking part in the tests.

Damage to the texture of soft fruits, such as peaches and nectarines, from the relatively high doses of radiation needed to control rot and mould had been a problem. New U.S. experiments recently showed that a combination of hot-water dip and half the previous radiation dose can prevent rot and mould without affecting the texture of the fruit.

This is important because it permits reductions in spoilage for these relatively expensive foods. A similar technique was successful with table-quality cherries.

Research at the University of Hawaii in Honolulu resulted in techniques for adding three to four days to the life of harvested papayas, making possible a bigger market in Japan and in the continental United States for this delicate fruit.

Experiments at the University of Florida at Gainesville determined the proper dose to control rot in mangoes, another tropical fruit with great overseas market potential. Many nations forbid the entry of such fruits because of the rot problem.

Two years of research at the University of California with tomatoes irradiated at the "pink" or "full-ripe" stage produced techniques for keeping them palatable eight to 15 days longer. This is important because many tomatoes shipped in the "green" stage and allowed to ripen in stores are not top quality.

RADIATION MACHINES

Major advances have been made recently in the United States in design and construction of radiation machines. Twelve have been built or are nearing completion. Three are mobile and can be used on fishing boats at the scene of the catch.

On-ship irradiators have less capacity than land-based models, but they have already proved their value for immediate processing of a catch. This also has the advantage of requiring lower doses to achieve prolonged shelf-life.

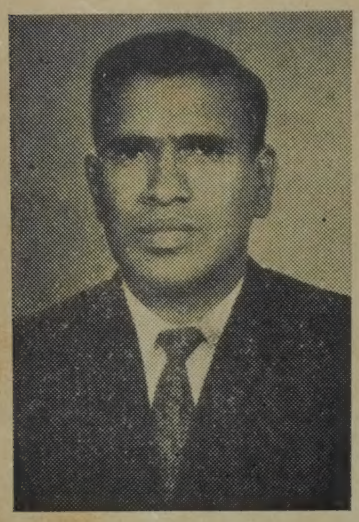
During 1966, 15 tons of bacon were sterilised in the first such large-scale irradiation for the Army which has been testing small batches of meat and other irradiated products for several years.

The U.S. Government's Food and Drug Administration has until now approved only a few irradiated products for human consumption. But it is anticipated that decisions on the clearance of cod, flounder, haddock, ocean perch, pollack and sole will be made shortly.

Clearance for strawberries is also expected soon. Irradiation gives that fruit a two-week shelf-life, double that of unprocessed strawberries.

Personalia

Dr. K. Suryanarayana Rao, Scientist at the Nutrition Research Laboratories, Hyderabad, has been awarded a post-doctoral fellowship to work at Western Research University, Cleveland, Ohio. Graduating in veterinary science from Osmania University in 1961, Dr. Rao did his post-graduation course at Magadh University, Gaya, in 1963. He completed his work for a doctorate in animal nutrition with "Studies on groundnut toxicity and aflatoxins" as the subject of his research. Dr. Rao had a brilliant academic record, winning university gold medals for securing the first rank both at the graduate post-graduate levels.



INDIANS WIN FAO PRIZES

Four Indians were among six scientists to be awarded cash prizes recently by the U. N. Food and Agriculture Organisation (FAO) for contribution towards improving the world's rice crop.

A $400 prize went to Mr. Y. L. Nene, Associate Professor of Plant Pathology at the U.P. Agriculture University, Pantnagar. The judges described his paper on "Khaira disease of paddy and its control" as a contribution not only to Indian rice cultivation but also to rice nutrition in general.

Three researchers at the Central Rice Institute in Cuttack, Orissa, shared another $400 prize. They are Mr. S. Patnaik, Mr. R. Sahoo and Mr. A. K. Bandyopadhya. The judges selected their paper on "Management of upland rice soils for increased fertilizer efficiency" for its potential practical application and its originality.

American Professors Finis T. Wratten and Macon D. Faulkner, both of the Louisiana Agricultural Rice Experiment Station, Crawley, Lousiana, shared another $400 prize. Their paper on "a new system for rice drying", according to the judges, applied good engineering knowledge to a problem of wide interest.

The awards resulted from a competition announced as part of the International Rice Year in 1966.

MR. T. A. PAI

Mr. T. A. Pai, Managing Director of the Syndicate Bank Ltd. and former Chairman of the Food Corporation of India, is likely to head the Agricultural Finance Corporation proposed to be set up by scheduled commercial banks in the country.

IOPEA'S NEW CHAIRMAN

Mr. N. P. Nopany has been elected Chairman of the Indian Oil and Produce Exporters' Association. He succeeds Mr. J. J. Tanna.

LEVER APPOINTMENT

Mr. P. R. Schroeder has joined the Ghaziabad factory of Hindustan Lever Ltd. as Foods Development Manager.

After graduating from Leeds University, Mr. Schroeder joined Batchelors Foods in 1961 as a trainee and had been with their Technical Division since 1965.

Letter to the Editor

Dear Editor,

You and your board of honorary advisers deserve appreciation for your endeavour and efforts in publishing "The Food Industries Journal." It is a matter of satisfaction that the standard of the Journal is high both in presentation and contents.

The diet of Indians in general is very deficient, particularly in respect of its protein content. High cost of protein food and the poor economic condition of the people may be the main factors, but our food habits are in no way less responsible for it. These traditions are hard to change, however. It is a serious matter and a country-wide awareness has to be created to understand the importance of nutrition and realise the implications of its deficiency. May I suggest that the Journal publish a series of articles contributed by experts? They should, besides emphasising the importance of protein-rich food, include data and formulations of balanced diet likely to be acceptable in different parts of India from the point of view of taste and other considerations.

The various wings of the food industry may also participate in this programme. They may publish, in addition to advertisements, information in the form of write-ups by their technical departments about the nature, food value and composition of their products. Since our food industry is in its infancy, the publication of such information and data will help it to shape its development on scientific and sound lines.

SAGAR, August 26. — **A Reader.**

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